

Film Informing Design for Contemplative Gameplay

Tim Marsh[†], Michael Nitsche[‡], Wei Liu[†], Peichi Chung[†], Jay D. Bolter[‡], Adrian D. Cheok[†]
National University of Singapore[†] Georgia Institute of Technology[‡]

Abstract

Borrowing from film and filmmaking styles, techniques and devices that manipulate spectators' attention and experience, this paper proposes an approach to inform design of games and gameplay to manipulate player's focus of attention and encourage contemplation – in design features, characters, story elements, etc. or even break the player's engaged attention in the game/virtual world altogether – to provide meaning, experience and opportunities for learning. Focusing on film styles alternative to the continuity style of Hollywood filmmaking, we discuss examples of design for contemplative gameplay in game-based learning environments/serious games, machinima and augmented and mixed reality games in previous, current and future projects. We propose that one goal of game design is to establish a rhythm between contemplation and engagement, and the appropriate rhythm is determined largely by a game's genre, platform and/or narrative.

CR Categories: K.8.0 [Personal Computing]: General—Games; H.5.1 [Information Interfaces and Presentation]: Multimedia Information Systems—Artificial, augmented, and virtual realities

Keywords: game design, film theory, filmmaking, French New Wave, Asian film, continuity style, engagement, interruption, reflection, experience, serious games, mixed reality, machinima

1 Introduction

While there's on-going criticism outlining the differences between film and video games, game design continues to successfully draw upon cinematic techniques for creative inspiration and to enhance player engagement and experience. Engagement is commonly used to describe a positive characteristic of virtual and game environment and other interactive digital media design and is commonly associated with terms like agency, immersion, presence and flow. Implied in these terms is that users' focus of attention is directed towards pursuing objectives (e.g. to play, learn, or be entertained, etc.). Engagement provides opportunities for user/player experience and it has been commonly argued that conversely, disruptions may interrupt user/player attention and consequently disrupt their experience.

[†]email: {tmarsh, idmliuw, cnmcp, adriancheok} @nus.edu.sg

[‡]email: {michael.nitsche, jay.bolter} @lcc.gatech.edu

One early approach that aims to be antidote to disruptive interaction and so can inform design for engagement is the concept of transparency. Transparency has long been central to informing design of computer-based applications to help maintain users'/players' focus of attention in pursuing objectives, for instance in the design discipline of human-computer interaction (HCI). Much attention has been focused on transparency and similar concepts informing interface design [e.g. Holzblatt et al. 1988; Laurel 1986, 1993; Nardi 1996; Norman 1998; Schneiderman 1987; Weiser 1991; Winograd and Flores 1986] and in virtual environments [e.g. Lombard and Ditton 1997; Slater and Steed 2000]. Transparency has been described in many ways and is captured well in the words of Nardi [1996 p. 11] "to describe a good user interface...[and following mastery] one that is supportive and unobtrusive, but which the user need pay little, if any, attention to". So having reached a level of competence or mastery in operation, interaction is performed with minimal conscious thought or effort and so disappears from the main focus of our attention.

However, as Bolter and Gromola [2003] pointed out, with new and emerging media, transparency is only half the story because designers often want users/players to reflect on a visible interface for the experience it provides them. To address this limitation, they use the metaphors "window" and "mirror" for the digital media user interface and the corresponding attributes "transparent" (disappearing, invisible) "made possible by mastery of techniques" as opposed to "reflective" (not disappearing, visible) "that helps us understand our experience of it". They propose that the goal of digital design is to establish a "rhythm" between a transparent window that gets out of the users' way (Structuralists focus) and reflection on the interface's mirror that reflects the user and their contexts (Designers focus).

Other work has looked to film, where spectator engagement is central, to address the limitations of using transparency alone to inform new and emerging media design. For example, Marsh [2002; 2003a] borrowed ideas from the "continuity style" of the Hollywood filmmaking process [e.g. Bordwell et al. 1988; Messaris 1994] to inform media content design and analysis (e.g. virtual and game environments). Continuity is to maintain a continuous, coherent flow of content or narrative. Bordwell et al. [1988] argue that continuity stood for "smoothly flowing narrative" and suggest that "increasingly the conception of quality in films came to be bound up with the term 'continuity' ". Later, it came to specifically refer to a set of guidelines for cutting shots/scenes together. The present use of the term means both "quality" and "a set of goals and principles" or conventions (e.g. 180° rule, establishing shot, flashbacks, close-ups, transitions, etc.) that underlie the entire film's visual storytelling process. When a Hollywood film exhibits continuity, the filmic devices or conventions are less apparent, and become transparent or invisible to the spectator. Hence, the Hollywood or continuity style of filmmaking is also referred to as "invisible style". Conversely, awareness of filmic devices or the Hollywood filmmaking process may disrupt spectators' engaged experience and can be regarded

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Sandbox Symposium 2008, Los Angeles, California, August 9–10, 2008.

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as discontinuity and referred to as “continuity errors”. These are problematic/noticing transitions, mismatches in on-screen objects and props, or narrative errors. For example, jump cuts in which objects appear to move or jump in position, time changes on background clocks, clothes are rearranged/removed from one shot to the next, firing of ten bullets from a six-shooter revolver or flaws in the storyline, etc.

In addition to these “continuity errors” and largely with reference to early Hollywood filmmaking, Burch [1986 pp. 486-488] coined the term “non-closure” to refer to the reliance on extra information in film to supplement weak narrative and/or filmmaking process. For example, the hands of a clock spinning round, pages torn from a calendar, text/inter-titles between scenes or voiceovers (narration or commentary) to suggest spatial and temporal transitions (i.e. shifts in places/locations or the passing of time).

Turning our attention to virtual and game environments, Marsh [2002; 2003a] used continuity to refer to the continuous and coherence of, and constraints imposed by, content that includes the imagery and audio that shape the social and cultural structure, and the unfolding narrative/story in which users/players interact or play. Similarly, other work has looked to the “continuity style” to inform interface design by “preserving thematic continuity” [May and Barnard 1995], and in the design of smooth animation “to maintain an illusion of a perceptually consistent [virtual] world” to provide continuity of experience [Hubbold et al. 1995] and similarly continuity of presence [McGreevy 1992]. So, in contrast to transparency that following mastery becomes “invisible”, continuity provides ways to inform and reason about the design of, and our experience with, virtual, game or media content that is noticeable, in-focus or “visible” to the user/player [Marsh 2002; 2003a].

While continuity addresses limitations of transparency and provides a way to inform design and analysis to maintain user/player engagement in visible social and cultural structures of virtual and gaming environments, our primary interest in this paper is in shifting user’s/player’s focus of attention between and towards design features, characters and story elements, or even break the player’s engaged attention in the virtual/gaming world altogether to provide meaning, experience and opportunities for learning. In this paper we present ideas informed from film styles other than the Hollywood filmmaking process to inform game design towards this goal of design for contemplation. We propose that one goal of game design is to establish a rhythm between contemplation and engagement, and the appropriate rhythm is determined largely by a game’s genre, platform and/or narrative.

The next section starts by identifying criticisms leveled against the continuity style of Hollywood filmmaking and the corresponding goal of spectator engagement. This is followed by discussions on other filmmaking styles that are alternative to and in some respects intentionally subvert the Hollywood style to shift the spectator from the engaged to a more contemplative role. We then continue discussion on related ideas of focalization or point-of-view. Next we argue for incorporating similar devices discussed herein to inform design of interactive digital media. Focusing on digital games, we provide examples of how current and future moves are taking place to inform game design and gameplay for contemplation.

2 Film informing manipulation of player attention / contemplation

Film and the effect it has on an audience isn’t without criticism. In his essay, “Dream Machines: New Media as Intoxicants”, Jos ten Berge [1999] presents arguments that compare the experience of film and new media with that obtained from Art. In particular, he refers to the frequently cited work of the French writer Georges Duhamel [1930] who disparagingly described film as a pastime for “helots” who “seek solace in a type of entertainment requiring absolutely no effort”. His remarks derive from the dynamics of moving images that he described as: “Too much noise. Too much movement!” requiring film spectators little chance for contemplation beyond the experience that is “predetermined”. Consequently, he described the mental state of the spectator as “anaesthetised,” “gorged,” “paralysed,” and “hypnotic”. In contrast “true” Art for Duhamel [1930] was “something conquered by the mind with an effort” causing what Berge [1999] describes as “a superior and active intellectual contemplation”. However, it can be argued that Duhamel’s [1930] criticisms are not necessarily extensible to all filmmaking styles and are perhaps most applicable to the dominant mainstream filmmaking style of the day, that is, the “invisible style” or “continuity style” of Hollywood. For example, Duhamel’s [1930] arguments sharply contrast with early Russian filmmakers (e.g. Sergei Eisenstein) who would fiercely defend their films as Art brought about by the use of editing techniques to form a “montage” of visual imagery [Arnheim 1957] whereby juxtaposed shots evoke emotion, experience and/or provide meaning. In addition, though more inline with, and perhaps developing from Duhamel’s [1930] arguments, are the development of later filmmaking styles such as, avant-garde and experimental. Filmmaking styles like these and others such as Asian and French New Wave, as discussed below, provide an alternative to, and in some respects are intentionally “subverting” the invisible style [Messaris 1994] by shifting the spectator from the entranced to a more active and contemplative role.

In Japanese films for example, an alternative style exists whereby filmmakers use still shots and low camera angles to tell stories. One of the most obvious examples of this is demonstrated in the classic movies of Yasujiro Ozu. This low camera angle technique is most commonly used during character conflicts, with the spectator in the third person perspective. For example, when the characters sit on tatami mats for a Japanese tea ceremony, the spectator is placed in a sitting position from afar, so allowing them to engage in the unfolding conflict. Alternative styles are also shown when the director uses long shots or takes without continuity editing to build up narrative breathing space. With the camera fixed in one position, the spectator can then concentrate on the atmosphere built up through background music and the action playing out in the scene (e.g. Tokyo Story 1953; Ohayo Good Morning 1959).

Another filmmaking style that provides an alternative to Hollywood filmmaking can be seen in the changing concept of space and speed in presenting character movement in Chinese cinema. Chinese kung fu cinema enhances spectator’s viewing experience by allowing them to see the potential of the human body to engage in all kinds of actions (e.g. free fall, roof top flying and fast speed fist combat, etc.). Filmmakers such as Ang Lee and Zhang Yimou do not simply rely on editing or camera movement to engage in storytelling, rather, Chinese cinema (e.g.

Crouching Tiger Hidden Dragon, 2000; Hero 2002) draws the spectators' attention by moving characters through the air using wires. This concept of unrestricted free human body movement demonstrates an alternative version to that of "action" in the traditional Hollywood cinema. While Western spectators have recently become familiar with these techniques, their original screenings in Western cinema in early 2000's and subsequent copycatting in Hollywood films was enough to surprise and awake audiences from a "hypnotic" engaged state to a more contemplative role so adding to the excitement and experience of the film. Similar techniques have already been used to inform action in video games. For example, fight sequences in Heavenly Sword (Sony PS3) resemble both Chinese film kung fu fight sequences and, in some respects, Japanese warrior games.

Finally, let us consider French New Wave cinema, another successful style of filmmaking in contrast to the Hollywood continuity style. French New Wave film encourages spectators not only to reflect or contemplate about what they are watching per se, but also consider the filmmaking process and devices used to make the film. For example, characteristics of this style of filmmaking that aim to achieve this are long tracking shots and fluid camera movements made possible by lightweight hand-held cameras, noticeable jump cuts, and corpsing (i.e. falling out of character by forgetting lines or laughing; Marsh 2003b) or breaking the fourth wall (i.e. deliberately stepping out of character roles in order to directly address the audience). These are all devices that constantly remind the audience that what they are watching is simply a film composed of a sequence of moving images.

Pioneers of this movement (e.g. Jean-Luc Godard, François Truffaut) intentionally surprise, shock, startle, and interrupt spectators from an engaged state and draw attention to their films through these devices and others such as voiceovers (e.g. "Band a Part", Godard, 1964) and repeated (i.e. shown more than once) and reverse (i.e. backwards) action (e.g. "A Bout de Souffle", Godard 1959), making spectators muse or question the filmmakers' intentions, the significance of the editing devices and commentary and their relation to the film's meaning.

This is by no means an exhaustive discussion of the techniques, devices and filmmaking styles that encourage spectator contemplation and are alternative to the continuity style of Hollywood. Similar techniques and devices have also been used in the theater to interrupt audiences and encourage contemplation. Probably some of the most well known of these techniques comes from the work of the playwright Bertolt Brecht who used devices such as unnatural and excessive stage lighting, characters addressing the audience directly, interrupted lines, songs and gestures, and display boards with descriptive or explanatory text, signs or drawings. Clearly, all of these are similar to alternative film styles and indeed Brecht is acknowledged to have played an important role in influencing French New Wave filmmaking.

A contributing discussion is the principle of "focalization" or point of view, which provides another narrative tradition that can be applied by game design and technology to support a certain direction for the user/player. Focalization originally emerged from a distinction between the "doing" and the "telling" about action [Genette 1980]. Based on this distinction, Bal defines "focalization" as "the relationship between the 'vision' the agent that sees, and that which is seen" [Bal 1997 p. 146]. During any

gaming situation the player is situated in-between these poles. Players are looking at the virtual world displayed on their screens but they also engage with them as performers involved in the interaction with the ongoing events. Thanks to this dual engagement, the relationship between the interaction and its presentation can be used to shift the focus of the player. Means of focalization in games [Nitsche 2005] can affect the player, for example through directed camera behavior, lights, or sounds. Through these adjustments games can direct players without interrupting the interactive access as they do not directly restrict the interaction layer but only the presentations layer of these interactive events. Focalization, thereby, provides a consistent way to suggest to the player without enforcing single solutions. A focalizing camera can invite/draw attention to a certain detail in the game world and evoke certain expectations of Gibson's affordances in the player [Gibson 1986]. This goes parallel to Fencott's principle of "perceptual opportunities" [Fencott 2001] but it puts a stronger emphasis on the visualization as a structural and affective mechanism.

Relating these discussions to the work of this article, an important question is: how much should users be made to think or contemplate? At one extreme, advocating ideas of transparency from HCI (i.e. not referring to games), Krug and Black [2000] argue that users should not be made to think, or to think "needlessly" about how to operate an interface so as not to impede the flow of interaction. On the other hand, if interaction involves an element of reflection or contemplation brought about through interruption, surprise, or rousing the user/player, then designers have the potential to actively engage the user/player in, for example, domain knowledge and information, and/or the unfolding narrative/story, to provide meaning, experience and opportunities for learning. So like film, the manipulation of design and design features to provide shifts in focus of attention and contemplation for the user/player can be considered as new kinds of idioms (e.g. phrase, vernacular, language or dialect) constructed with a lexicon (e.g. vocabulary, glossary) just like the lexicon of film (e.g. close-ups, cross cuts, flashbacks, etc.) between directors and spectators [Pausch et al. 1998]. Thus, in the words of Laurel et al. [1994] provide the potential to design virtual and game environments and interactive digital media of "increasing complexity and power". Continuing discussions on film from above, it will also provide the potential to design virtual and game environments and digital media that are more contemplative and in turn, satisfying and fulfilling beyond the experience that is "predetermined".

In the next section we present examples of ideas informed from film styles other than the Hollywood filmmaking process to inform game design for contemplation. In order to assist the reader, table 1 brings together some of the examples outlined in discussions above on techniques and devices largely associated with non-continuity filmmaking styles to surprise, interrupt, rouse, and provide emphasis, humor, experience and meaning to inform game design for contemplation.

Technique / Device	Description & Effect / Affect
Transitions and edits	technique by which shots, scenes or animations are juxtaposed, usually influenced by narrative, to suggest spatial and temporal change (shift in places/locations or the passing of time) or convey mood and meaning: jump cut – edit in which a section of a continuous shot or animation is removed and discarded so that objects and characters, etc. appear to jump to a new position, to interrupt and surprise montage – juxtaposed shots or images to surprise, shock, evoke emotion, experience and/or provide meaning fades – screen/display turns black, white or blank, etc. to momentarily interrupt or pull the spectator/player out of an engaged state
Voiceovers	narration or commentary on events, action or story, or to provide extra information, to interrupt, surprise, etc.
Breaking the fourth wall	character deliberately stepping out of their role in order to address an audience/player directly, to interrupt and startle
Corpsing	falling out of character, usually through forgetting lines or by laughing, startling and injecting a sense of humor
Focalization	invite, interrupt or direct attention to emphasize certain objects or details in the film/game world through directed camera behavior, lights, or sounds
Non-closure devices	provide emphasis or extra information to supplement narrative such as, inter-titles between shots, the hands of a clock spinning round or pages torn from a calendar, to suggest shifts in places/locations/spaces or the passing of time
Repeat action	replaying of action, event, music, dialogue or sound to interrupt, surprise and emphasize
Reverse action	backwards or reverse showing of action, event or sound to interrupt, startle and add humor
Display board	static or dynamic notice/poster/window with text, sign or drawing to emphasize, describe, illustrate, interrupt, add humor, etc.

Table 1: Some examples of techniques/devices largely associated with filmmaking styles alternative to the Hollywood continuity style to surprise, interrupt, rouse, and provide emphasis, humor, experience and meaning to inform game design for contemplation

3 Between Engagement & Contemplation

This section presents design ideas and concepts informed from film styles other than the Hollywood filmmaking process to inform game design towards a goal of design for contemplation. But what will these devices look like in digital games? We discuss examples of design in game-based learning environments/serious games, machinima and augmented and mixed reality games in past, current and future projects.

3.1 Educational Serious Games

Initial research was carried out in order to investigate the proposed ideas of manipulating user focus of attention by revisiting the development of an educational learning environment or serious game. Hendriksen [2005] talks about a similar goal for design of game-based learning but focuses on the concept of flow. We utilize, in particular, the ideas from film and filmmaking styles that have been argued herein, some of which are outlined in table 1, to help in our analysis, interpretation and reasoning of why design solutions were successful. In addition, recommendations to address design and learning problems captured in studies are provided.

A serious game has been developed in the Integrated Media Systems Center (IMSC) at the University of Southern California (USC) [Marsh et al. 2005]. The games' objective is to help students learn the physiology and biological processes of human organs. It consists of two learning activities or missions: Nature

Pumps mission helps students learn the processes of digestion and absorption of nutrients, and the Control Systems mission teaches students the roles of glucagon and insulin in maintaining blood glucose levels.

Throughout the development cycle, many analytic and empirical studies were carried out to make improvements in development. This earlier work focused on the concept of transparency and breakdown in transparency to detect problems mainly associated with usability, but also some aspects related to user experience

In one study session, an expert games player completed the game missions more efficiently and faster than any of the other players but scored lower in a post-study learning questionnaire than in the pre-study baseline questionnaire, suggesting that he learnt very little from playing the educational game. This indicates problematic design whereby the user was allowed to proceed through the game and complete it without having to think about the content of the game. In the development of the game, one aim was to include many game-like design features or devices so the game would be more appealing, exciting and motivating for users, in an attempt to reach a balance between fun and education.

For our example game player, it can be reasoned that these design features were very familiar, requiring little conscious attention in interaction in their operation; that is, they can be considered to be transparent to the player. While he self-reported in a debriefing session that he had enjoyed playing the game, the questionnaire results suggest that he had learnt very little and indeed in one mission he learnt nothing.



Figure 1: Left-hand side is an earlier version of the educational serious game environment with design problems and on the right-hand side a later version with the design problems resolved. This shows many examples of using design features to manipulate user focus of attention and encourage contemplation. For example:

- animated design features represent abstractions of chemical and biological processes. The more intuitive the design the more transparent and less players have to contemplate about their meaning.
- sliding instruction box appears at the bottom right-hand side of the screen for a short duration as a reminder to subjects of their tasks/goals. This shifts player's attention to consider their past and planned actions.
- revolving green cylinder with black arrows in the membrane wall helps players understand that they may pass through it. The green cylinder is a device to manipulate player's attention, encourage contemplation and provide meaning – which in this case means there is a space to explore beyond this membrane wall.

Using the ideas proposed in this paper, some of which are outlined in table 1, we can identify that the challenge for design to overcome this problem is to ensure that design aspects or features introduced are not too familiar so as to be transparent, requiring little conscious thought, but instead encourage the player to contemplate the subject matter and in turn learn. For example, the simplest solution would be to make players pause to answer a question correctly about the subject matter before being able to proceed further within the game. A more elegant solution is to incorporate this into a device, feature or plot/narrative design that is not too familiar to players so as not to be transparent in operation but requires a level of contemplation to reflect on the subject matter and hence, to encourage the player to learn as well as play. Utilizing the techniques or devices shown in table 1 provides a way to achieve this and design gameplay for contemplation, which in turn can help players to learn.

In reference to Figure 1, the left-hand side shows an earlier version of the educational serious game environment with design problems captured in empirical studies and on the right hand side a later version is shown with the design problems resolved. This shows many examples of using design features to manipulate users'/players' focus of attention and encourage contemplation. For example, the simple animated design features (e.g. arrows and spheres) represent abstractions of chemical and biological processes taking place inside the human body. Using the ideas proposed herein we can reason that the more intuitive the design the more transparent and so players have to think less to understand the meaning. In the example, one can intuitively understand from the animation, the direction of flow and see any corresponding effects that are directly or indirectly caused. If a deeper understanding of the chemical and biological processes is required then alternative design features and/or different animation is required (e.g. voiceover or display boards) to encourage contemplation and provide meaning.

Another example illustrated in Figure 1, is the sliding instruction or task box which is a good example of a display board as described in table 1. It was found in a study sessions that tasks were not explicitly explained, and in some case players forgot current tasks and/or tended to be unaware of the next task in order to complete the mission. A sliding instruction box appearing at the bottom right-hand side of the screen for a short duration as a reminder of their goals was found to resolve this problem. From studies we know that the sliding box broke or shifted players' attention, and so using the ideas from film proposed herein, we can reason that user's then considered the intended task and contemplated their actions (past and planned) in order to achieve the task.

Finally, it was found in empirical studies that players had no idea that they pass through an opaque membrane wall. The introduction of a revolving green cylinder with black arrows, as shown in Figure 1, was an attempt to indicate to users that they could walk through the membrane and explore the space beyond it. Perhaps this is not the most elegant of solutions, but in follow-up empirical studies it was found that all users correctly established that they could pass though the membrane. In debriefing sessions, many users confirmed that the design feature made them question why it was there and following a short period of contemplation, utilize it accordingly. This corresponds to, and its effect can be described well by, the design techniques/devices of focalization (i.e. directing/interrupting attention) and non-closure (i.e. providing supplementary information).

Finally, looking at the broader picture, while an important challenge has been to design games to engage students exclusively in gaming activities to learn, less focus appears to be on the design of games to allow students to learn through game play combined with collaboration with other students in the classroom in the real world. Techniques or devices introduced herein to deliberately interrupt or break attention in engaged game

play at appropriate times to promote contemplation and/or discussion may help with this collaborative learning approach. For example, at a predefined point in gameplay, characters break the fourth wall (see table 1) by turning to players and addressing them directly by asking questions and/or inviting them to discuss with other students any issues or concerns that arose out of gameplay. Similar effects can also be achieved through the use of devices such as, fades, displays boards and voiceovers whereby follow-on exercise instructions are described or narrated to players/students to interrupt or pull them from an engaged state.

3.2 Mixed Reality Games: Human Pacman

Based on the popular arcade Pacman game using ubiquitous computing and mixed/augmented reality (AR) technologies, Human Pacman is a role-playing computer game that blends the natural physical world seamlessly with a fantasy virtual playground. It was developed in the Mixed Reality Labs at the National University of Singapore [Cheok et al. 2004]. It combines real human-social and mobile-gaming, providing collaboration and competition between players in both the wide outdoor physical areas and the computer game world. With Human Pacman, Pacmen and Ghosts are real human players who can move around in the wide outdoor game area and perform tasks to reach their goals and experience mixed computer graphics fantasy-reality provided by using wearable computers (Figure 2). Following the 2D arcade Pacman game rules, Virtual cookies are incorporated into the game for the Pacman player to collect by physically walking through them and tangible physical objects are used as super cookies for the Pacman player to physically collect to obtain ghost-devouring power for a predetermined time.

In order to increase players' experience and motivate them to keep playing, we are in the process of adding new design features to manipulate players' focus of attention. The design features aim to introduce a degree of contemplation in the game for the players. This will be achieved by players being able to send information, codes and other agreed conventions to other players in order for them to be able to construct meaning and increase the complexity and experience in the game. For example, as illustrated in Figure 3, text messages indicating that an enemy is close by and virtual design features such as arrows (e.g. non-closure and focalization) that appear superimposed with the real world through the player's AR goggles, interrupt as well as guide them where to go to escape from the enemy are sent one from one team member to another. Other windows (e.g. display boards) shown here are presented to players intermittently to interrupt, emphasize, alarm, illustrate, etc. These devices indicate the position of other team members, provide a bird's eye view location map of the player and others in the immediate vicinity and details of weaponry, if any. We are also investigating the use of other devices illustrated in table 1, such as, voiceovers to narrate or provide commentary on events and action, to interrupt, surprise, shock or even amuse.



Figure 2: Human pacman players with AR goggles and hand-held controls in the real-world playground



Figure 3: Player's point-of-view of real world playground seen through AR goggles showing superimposed codes information and conventions

3.3 Machinima and Mixed Media

Another example where the potential of these techniques and devices can be applied is machinima. Machinima is defined as "filmmaking with a real-time virtual 3D environment" [Marino 2004]. The term machinima originated from the combination of "machine" and "cinema" and the format has thrived as a hybrid for more than a decade. In the creation of a machinima production, players become producers, directors, camera operators and performers to stage and present an event in a game space. These productions are forms of emergent play [Salen and Zimmerman 2003] that utilize the predetermined settings of the game but strive toward the cinematic and apply mainly the tools of film language. Through this process machinima productions become an expression based on play where cinematic traditions and game play interactions converge. The results are inherently intertextual employing established visual as well as narrative traditions on the one side and game settings and operations on the other [Nitsche 2007].

As machinima is essentially a linear presentation of gameplay, that includes events, lights, camera angles, etc. in a gaming environment, many of the techniques from alternative styles of film other than the continuity style of Hollywood and focalization discussed earlier and outlined in table 1, can be applied and incorporated to provide a level of contemplation for the user/player. For example, devices such as transitions (fades, montage, jump cuts) and repeat and reverse action to surprise, startle, interrupt and provide meaning.

The Second Life Augmented Reality project conducted by MacIntyre, Bolter, Nitsche, and Farley at Georgia Tech originated as such a machinima production environment in which the client of the massively multiplayer online world of LindenLab's Second Life was connected to an Augmented Reality interface. This combination resulted in a mixed media set up where real performers can see themselves in virtual worlds or can project virtual avatars into the image of the real world.



Figure 4: Museum of the Mind machinima (Vandagriff 2008) – avatar projected into the real world



Figure 5: Live mixed media performance between real improvisation actors and virtual character

The static-camera set up as seen in Figure 4 and Figure 5 creates a shared stage as it combines the images of physical and virtual

world live on a single screen creating a form of mixed media proscenium. Limiting as this visual frame might be, it provides a space in which narrative/action can be played out. In addition, the same interface can be operated using a head-mounted display that allows complete freedom of view as it incorporates a first-person point of view based on the physical situation of the user.

As we move into a new era of ubiquitous, mobile, mixed and augmented reality games, opportunities are opening to design novel ways to manipulate users'/players' focus of attention to shift between engagement and contemplation. We anticipate that as we search for new ways to inform design of new and emerging gameplay, increased focus will be placed upon techniques, such as those in table 1, to inform design to invite contemplation – whether that is to stir, shock, anger, amuse and/or arouse.

4 Discussion

The main purpose of this paper has been to inform analysis and design of techniques and devices to manipulate user/player's focus of attention in digital games. To do this, we have borrowed techniques largely from filmmaking as a means to encourage the player to consider or contemplate the virtual or gaming environment, so providing meaning, experience and opportunities for learning. We focused on film styles alternative to the continuity style of Hollywood filmmaking and then discussed examples of design for contemplative gameplay in game-based learning environments/serious games, machinima and augmented and mixed reality games in previous, current and future projects. It is acknowledged that some of the techniques outlined in this paper may already be in use in games in one form or another however the work herein provides concepts, arguments and a language to categorize a range of techniques and devices for the design of contemplative gameplay.

The proposed ideas to inform design to manipulate player focus of attention represents an example to develop idioms or conventions for virtual, mixed and game environments, and so provide the potential for designs of "increasing complexity and power". One goal of future work is to investigate how games' technology, genre and narrative determine the appropriate rhythm between contemplative and engaging gameplay. Finally, in on-going work we are using the same approach to that described herein to reason about the manipulation of users' experience with new and emerging interactive and digital media.

Acknowledgements

Thanks to members of the 2020 Classroom project IMSC, USC.

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